Northumberland County Dune Inventory

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Northumberland County Dune Inventory

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Cover Photo: Looking north toward Smith Point along Northumberland, Virginia’s Chesapeake Bay shoreline, 24 Oct 2001 by VIMS, Shoreline Studies Program.
1 INTRODUCTION

1.1 Purpose

Northumberland County, Virginia is located on the western shore of Chesapeake Bay (Figure 1). Primary tidal shorelines extend from Smith Point southward to Indian Creek along Chesapeake Bay and northwestward up the Potomac River to the Yeocomico River. Fifty-nine (59) dune sites were identified along the Northumberland County shoreline. Thirty seven (37) were located on Chesapeake Bay and the remainder along the Potomac River (Figure 2). It is the intent of this publication to provide the user with information on the status of dunes in Northumberland County. This information comes from research performed in 1999 and 2000 which was presented in a report entitled “Chesapeake Bay Dune Systems: Evolution and Status (Hardaway et al., 2001). Since much of the data was collected several years ago and the beach and dune systems may have changed, this report is intended only as a resource for coastal zone managers and homeowners; it is not intended for use in determining legal jurisdictional limits.

1.2 Dune Act

Coastal dune systems of the Commonwealth of Virginia are a unique and valuable natural resource. Dunes are important to both the littoral marine system (as habitat for flora and fauna) and the adjacent landward environment (as erosion control and protection from storms). These functions form the basis for the Coastal Primary Sand Dune Protection Act of 1980 (Act)1 and the related resource management effort under which the primary dune and beach components of existing dune systems are protected. Secondary dunes are not protected under the Act; however, as they are an important part of the overall dune system, they were included in the original report (Hardway et al., 2001) and analyzed as part of a risk assessment performed by Varnell and Hardaway (2002). In this inventory, both primary and secondary dunes are included.

Primary dunes must meet three criteria in order to fall under the Act’s jurisdiction:

1. **Substance:** a mound of unconsolidated sandy soil contiguous to mean high water
2. **Morphology:** landward and lateral limits are marked by a change in grade from >10% to <10%.
3. **Character:** primary dunes must support specific plant species or communities which are named in the Act and include: American beach grass (*Ammophila breviligulata*); beach heather (*Hudsonia tomentosa*); dune bean (*Strophostylis* spp.); dusty mäker (*Artemisia stelleriana*); saltmeadow hay (*Spartina patens*); seabeach sandwort (*Arenaria peploides*); sea oats (*Uniola paniculata*); sea rocket (*Cakile edentula*); seaside goldenrod (*Solidago sempervirens*); and short dune grass (*Panicum ararum*).

1The General Assembly enacted the Coastal Primary Sand Dune Protection Act (the Dune Act) in 1980. The Dune Act was originally codified in Code § 62.1-13.21 to -13.28. The Dune Act is now recodified as Coastal Primary Sand Dunes and Beaches in Code § 28.2-1400 to -1420.

Figure 1. Location of Northumberland County.
2 BACKGROUND

Coastal primary sand dunes form by the accumulation of sand due to the interaction of wind and wave action along the shore. Sand deposited on the beach during periods of relatively low wave energy is moved landward by onshore winds. The deposition of material above the intertidal zone allows vegetation to take root along the wrack line which then acts as a baffle, slowing wind speed and causing wind-borne sand to settle and be trapped in the vegetation, thereby resulting in further accretion of the dune. Therefore, the size and location of a primary dune is determined by the amount of sand available and the ability of wind and waves to move it as well as the degree to which any existing vegetation can act to trap it. Just as the intensity, direction, and duration of winds and waves constantly change through the seasons, so too, do coastal dunes. They exist in a state of flux.

Dunes act as a reservoir of sand which can buffer inland areas from the effects of storm waves and, in the process, act as natural levees against coastal flooding. During high energy conditions, such as the northeast storms which frequent the Eastern Seaboard, primary dunes may be subject to attack by wind-driven waves aided by storm surges. The dune may be eroded, and the sand deposited in an offshore bar. Then, under low-energy conditions, the sand may move back to the beach.

All dunes in the Chesapeake Bay estuarine system are mobile features especially with regards to coastal zone management. Unlike ocean dune fields that are relatively continuous features exposed to the open ocean, the dunes of the Chesapeake form across a temporal and spatial geomorphic matrix driven by sand volume, varying wave climate, and shoreline geology. The coastal geology, in large part, determines whether shoreline erosion acts upon the upland (high bank) or marsh (low bank). Sand supply and the long-term local wave climate are significant factors in the location of dunes. The stability or ability of a dune/beach system to accrete over time is necessary for the formation of secondary dunes.

Natural dunes in the Chesapeake Bay estuarine system vary in size and nature, but all require an accreted feature, such as a beach washover or a spit to become vegetated above the intertidal zone. Vegetation and a continuous beach/dune profile are required to create the jurisdictional primary dune. If the dune/beach forms across a low marsh shoreline, the system will move landward in response to storms, and only a low primary dune will exist. If sand can accrete bayward due to shoals, spits, or man-made features such as jetties and groins, then a secondary dune may develop from the original primary dune.

Hardaway et al. (2001) found that the occurrence of dunes around Chesapeake Bay is due, in part, to three factors: 1) morphologic opportunity (i.e., relatively stable setting), 2) abundant sand supply in the littoral transport system, and 3) conducive onshore wind/wave climate. Deposited sand must remain above a stable backshore to allow dune vegetation to become established. Each dune documented by Hardaway et al. (2001) has its own history of change -- growth and decay; natural and anthropogenic. Many miles of natural dunes have been altered by development, and many have been formed in response to processes altered by man’s influence. Dunes around the Chesapeake Bay estuarine system in the localities within the Act encompass only about 40 miles of shoreline (Hardaway et al., 2001). This is about 0.4% of the total Bay shore - making it an important, but rare, shore type.

Figure 2. Geographic extent of dunes in Northumberland County.
Dune System Classification

The Chesapeake Bay dune classification was developed in Hardaway et al. (2001) and is portrayed in Figure 3. This classification is based on factors that are unique to certain dune systems and has a basis in the dune field evolution, vegetative zones, lateral and vertical extent of primary and secondary dune features, and anthropogenic impacts.

Dunes are categorized as Natural (1), Man Influenced (2), or Man Made (3). These three types reflect how the state of the dune is most impacted. The parameters (A through G) are most influential in defining the status of a given dune system. Parameter values within each category assign a range of limits or characteristics. Categories A, B, and C relate to the nature of the impinging wave climate at a given site while categories D, E, and F relate to geologic parameters. Dune parameter G relates to the type of anthropogenic influence.

Fetch Exposure (A) is a qualitative assessment of the wave exposure and wave climate across open water. Wave impact is the dominant natural process driving shoreline erosion and sediment transport along the Bay coasts. Riverine, Bay Influenced (A.1) is somewhere between the Open Bay exposure (A.2) and Riverine Exposure (A.3). Generally, A.1 sites have fetches of 5-10 nautical miles (nm); A.2 have fetches of >10 nm; and A.3 have fetches <5 nm.

Shore Orientation (B) is the direction the main dune shore faces according to eight points on the compass. Shoreline exposure to dominant directions of wind and waves is a component of fetch exposure (A) and wave climate as well as aeolian processes that assist in dune growth and decay.

Nearshore Gradient (C) controls wave refraction and shoaling that, in turn, affect the nature of wave approach and longshore sand transport as well as onshore/offshore transport. The presence or absence of bars indicates the relative amount of nearshore sediment available for transport.

The Morphologic Setting (D) is significant in the genesis of a particular dune site. Aerial imagery from VIMS SAV Archive and field observations were used to determine and classify the Morphologic Setting. Four basic categories were developed including: 1) Isolated dunes, 2) Creek mouth barrier dune/spit, 3) Spit and 4) Dune fields. Morphological Settings 1 and 4 are distinguished only by shore length (i.e. Morphologic Setting 1 < 500 ft and Morphologic Setting 4 > 500 ft) as an arbitrary boundary. These categories were subdivided to reflect the nature of the setting into four subcategories which are 1) Pocket, 2) Linear, 3) Shallow Bay and 4) Salient.

The Relative Stability (E) of a dune is very subjective. It is meant as a value judgement as to the overall current and future integrity at the time of the site visit. If the site had wave cut scarp(s) along the primary dune face and/or was actively moving landward (overwash), it was termed Land Transgressive/Erosional (E.3). If the backshore/dune face had a slight gradient with stabilizing vegetation, it was stable (E.2) or, possibly, accretionary (E.1).

**Figure 3.** Classification system for Chesapeake Bay identified dune systems (from Hardaway et al., 2001).
The underlying substrate (F) is a general category for the type of substrate or sediment the dune resides on and against. Two broad categories were chosen: marsh and upland. The marsh category includes creek bottoms which should be a separate category because beach/dune development can occur across the mouth of a creek bottom without a true marsh. The distinction between upland and marsh was that the marsh substrate is usually a low bank subject to washover processes, whereas the upland area offered a "backstop" to land beach/dune migration.

If the site was not Natural (1), then the nature of man’s impact was determined by the type of modification. The shore structures include Groins (G.1), Bulkheads and Revetments (G.2), Breakwaters (G.3), Jetties (G.4), and Beach Fill (G.5). The degree of impact any given structure or combination of structures had on the dune site was not always clear. The Relative Stability (E) relates in part to whether man’s influence was erosive (destructive) or accretionary/stable (constructive).

2.2 Site Characteristics

Coastal zone profile and vegetation types present on dunes were determined by site visit. Beach profile transects were performed at most sites to measure the primary and secondary dune (where present) within 100 feet of the shoreline. Standard surveying and biological procedures were utilized. Not all dune sites were surveyed.

Each surveyed transect used the crest of the primary dune as the horizontal control and mean low water (MLW) as the vertical control. The primary dune crest was determined on site. The MLW line was indirectly obtained from water level measurements. The observed water level position and elevation were checked against recorded tidal elevations at the nearest NOAA tide station and time of day to establish MLW on the profile.

The typical dune profile has several components (Figure 4). A continuous sand sheet exists from the offshore landward and consists of a 1) nearshore region, bayward of MLW, 2) an intertidal beach, berm, and backshore region between MLW and base of primary dune, 3) a primary dune from bayside to landside including the crest, and, where present, 4) a secondary dune. All profiles extended bayward beyond MLW and landward to at least the back of the primary dune. The secondary dune crest was always measured, but the back or landward extent of the secondary dune could not always be reached. The dimensions, including lateral position and elevation of various profile components were measured. These include: primary dune crest elevation, distance from primary dune crest to back of dune, distance from primary dune crest to MLW, secondary dune crest elevation, secondary dune crest to back of primary dune, secondary dune crest to back of secondary dune, distance from back of primary dune to back of secondary dune, width of secondary dune, and width of primary and secondary dune.

During each site visit, dominant plant communities occupying the primary and secondary dunes (if present) were analyzed (Figure 4). Plant species distribution is based on observed percent cover in the general area of profiling and sampling within the identified dune reach.

![Diagram of Typical Chesapeake Bay Dune Profile](image-url)

**Figure 4.** Typical profile of a Chesapeake Bay dune system (from Hardaway et al., 2001).
3 DUNE DATA SUMMARY

Approximately 6.3 miles of dune shore have been identified in Northumberland County. Previous work by Hardaway et al. (2001) indicated a total of 81 possible dune sites in Northumberland, but site visits verified 59. Northumberland County dune sites had a wide variety of site conditions, ranging from large dune fields at Smith Point with many small isolated dunes. Thirty-seven of the dune sites resided along the open Chesapeake Bay coast which has a history of dynamic shore change and geomorphic evolution. Dunes reside in areas of sand accretion and stability, such as around tidal creek mouths, embayed shorelines, in front of older dune features, as washovers, as spits and against man-made structures like channel jetties or groin fields. Site visits occurred in 1999 and 2000; site characteristics may now be different due to natural or man-induced shoreline change.

In Northumberland County, 7 of the 59 dune sites have primary and secondary dunes. Table 2 presents the measurements of the dune attributes. The average length of primary dune only sites was 411 ft whereas the average length of the primary with secondary dunes was 1,767 ft. Clearly, the wider sites were also the longest.

The 3 main categories of Natural, Man-Influenced and Man-Made were used to portray a site’s potentially most influential element. In Northumberland County, 40% are Natural, 60% are Man-Influenced and 0% are Man-Made (Table 3). The natural sites occur along the Chesapeake Bay shoreline whereas all the dune sites on the Potomac River are man-influenced. Recently, beach nourishment and grass plantings were placed upriver of Smith Point which would change site NL43 to Man-Made; however, that effort has not been quantified in the data set. Even though many of the dune sites exist on the Potomac River shoreline, only seven sites are considered Riverine. The remainder are Open Bay or Riverine, Bay Influenced.
Table 1. Identified dune sites in Northumberland County as of 2000. Site characteristics may now be different due to natural or man-induced shoreline change.

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*Public ownership includes governmental entities including local, state, and federal; otherwise ownership is by the private individual.

^Location is in Virginia State Plane South, NAD 1927

*One site with variable alongshore dune conditions
Table 2. Dune site measurements in Northumberland County as of 2000. Site characteristics may now be different due to natural or man-induced shoreline change.

| Dune Site Measurements | | |
|------------------------|---|---|---|---|
| **Dune** | **Shore Crest** | **Distance from Crest to back base** | **Distance From 2nd Crest to 1st back base** | **Distance From 2nd Crest seaward to 1st back base** | **Site Elev landward to MLW** | **2nd Crest landward to 1st back base** |
| **Dune No.** | **Length (Feet)** | **Elev (ft MLW)** | **(Feet)** | **(Feet)** | **Site Elev (ft MLW)** | **(Feet)** | **(Feet)** | **(Feet)** |
| NL 1 | 140 | 3.9 | 25 | 86 | | | | |
| NL 2 | 210 | 5.1 | 45 | 36 | | | | |
| NL 3 | 250 | 4.5 | 44 | 71 | | | | |
| NL 4 | 710 | 5.6 | 23 | 144 | Yes | 2.6 | 130 | 77 | 107 |
| NL 4A | 580 | 4.4 | 69 | 36 | | | | |
| NL 6 | 180 | 5.5 | 6 | 71 | | | | |
| NL 7 | 320 | 4.2 | 23 | 45 | | | | |
| NL 8 | 270 | 4.8 | 19 | 18 | | | | |
| NL 9 | 2,200 | 6.3 | 31 | 40 | | | | |
| NL 10 | 1,360 | 5.7 | 40 | 52 | | | | |
| NL 11 | 200 | 3.3 | 47 | 39 | | | | |
| NL 11A | 400 | 4.3 | 22 | 66 | | | | |
| NL 12 | 450 | 6.8 | 17 | 56 | | | | |
| NL 14 | 510 | 5.5 | 37 | 41 | | | | |
| NL 15 | 1,360 | 6.1 | 44 | 38 | | | | |
| NL 17 | 250 | 3.5 | 81 | 20 | | | | |
| NL 19 | 1,090 | 5.4 | 33 | 39 | | | | |
| NL 20 | 290 | 5.8 | 50 | 38 | | | | |
| NL 21 | 170 | | | | | | | |
| NL 22 | 390 | 4.0 | 35 | 27 | | | | |
| NL 22A | 160 | 7.5 | 10 | 35 | | | | |
| NL 23A | 300 | 4.3 | 13 | 52 | | | | |
| NL 23B | 140 | 4.1 | 16 | 51 | | | | |
| NL 26 | 120 | 5.0 | 16 | 45 | | | | |
| NL 27 | 180 | 4.6 | 14 | 34 | | | | |
| NL 28 | 480 | 4.5 | 15 | 30 | | | | |
| NL 30 | 250 | 5.6 | 45 | 85 | | | | |
| NL 31 | 620 | 2.5 | 39 | 48 | | | | |
| NL 32* | 360 | | | | | | | |
| NL 33 | 180 | 4.9 | 31 | 63 | | | | |
| NL 34 | 180 | 5.4 | 77 | 61 | | | | |
| NL 35 | 280 | 5.3 | 38 | 75 | | | | |
| NL 36 | 120 | 5.0 | 14 | 43 | | | | |
| NL 37 | 240 | 6.3 | 5 | 66 | | | | |
| NL 38 | 230 | 3.5 | 45 | 40 | | | | |
| NL 40 | 600 | 4.5 | 25 | 50 | | | | |
| NL 42 | 3,690 | 5.6 | 69 | 40 | Yes | 9.8 | 125 | 21 | 56 |
| NL 43 | 2,750 | 8.8 | 23 | 48 | Yes | 7.5 | 41 | 56 | 18 |
| NL 43A | 870 | 8.2 | 29 | 34 | Yes | 6.0 | 54 | 26 | 25 |
| NL 43B | 400 | 3.9 | 32 | 28 | | | | |
| NL 45 | 220 | 3.2 | 36 | 35 | | | | |

*Not profiled*
Table 3. Dune site parameters in Northumberland County as of 2000. Site characteristics may now be different due to natural or man-induced shoreline change.

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<td>NL 1</td>
<td>Natural</td>
<td>Open Bay</td>
<td>East</td>
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<td>Stable</td>
<td>Marsh/CB</td>
</tr>
<tr>
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<td>Marsh/CB</td>
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<tr>
<td>NL 3</td>
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<td>East</td>
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<td>Stable</td>
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<td>Isolated, pocket</td>
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<td>Shallow</td>
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<td>Isolated, pocket</td>
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<td>Isolated, pocket</td>
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<td>Isolated, pocket</td>
<td>Stable</td>
<td>Marsh/CB</td>
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</table>
4 INVENTORY

Each dune site is located on plates in Appendix A. The individual site inventory sheets are in Appendix B. Due to the mobile nature of dunes, their extent and morphology changes through time. The data presented in this report represents the status of the site at the time of assessment and to the best of the author’s knowledge. This information is for general management purposes and should not be used for delineation. For detailed delineation of any dune site, the reader should contact the local wetlands board or Virginia Marine Resources Commission. See Figures 3 and 4 for description of the site parameters and measurements listed below.

Each dune site has the following information on its inventory page:

1. Date visited
2. Central site coordinates in Virginia South State Plane Grid NAD 1927
3. Coordinates of profile origin
4. Site length in feet
5. Ownership
6. Site Type
7. Fetch Exposure
8. Shoreline Direction of Face
9. Nearshore gradient
10. Morphologic Setting
11. Relative Stability
12. Underlying Substrate
13. Type of structure or fill (man-influenced only)
14. Primary Dune Crest Elevation in feet above Mean Low Water (MLW)
15. Landward extent of Primary Dune from Dune Crest in feet
16. Distance from Dune Crest to MLW
17. Secondary Dune Crest Elevation in feet above MLW (if present)
18. Distance between Secondary Dune Crest and Primary Dune Crest
19. Landward extent of Secondary Dune from Secondary Dune Crest
20. Primary Dune vegetation communities
21. Secondary Dune vegetation communities
22. General Remarks

Also included on the dune site inventory page is the site cross-section, if surveyed, and ground photos, if taken. Long sites may have been represented with two or more profiles because the general morphology differs alongshore. Each profile was intended to be representative of that dune portion of the site.

5 REFERENCES


Acknowledgments

The authors would like to thank Carl Hobbs, III, for his critical review and editing of the report as well as the personnel in VIMS’ Publications Center, particularly Susan Stein, Ruth Hershner, and Sylvia Motley, for their work in printing and compiling the final report.
Appendix A

Location of Dune Sites

Plate 1  Plate 2  Plate 3
Plate 4  Plate 5  Plate 6
Plate 7  Plate 8  Plate 9
Plate 1A

Chesapeake Bay

Bluff Point

Plate 1B

Chesapeake Bay

Dividing Ck

Jarvis Point

Northumberland County

Shoreline Studies Program

Plate 1A

Plate 1B

Comprehensive Coastal Inventory
Center for Coastal Resources Management
Virginia Institute of Marine Science
Plate 2A
Northumberland County

Plate 2B

Chesapeake Bay
Hughlett Point

Dividing Ck

Chesapeake Bay
Ingram Cove
Ball Ck

Northumberland County

Dividing Ck
Hughlett Point

Chesapeake Bay

Ingram Cove
Ball Ck

VIMS
Virginia Institute of Marine Science

Shoreline Studies Program

Comprehensive Coastal Inventory
Center for Coastal Resources Management
Virginia Institute of Marine Science
Appendix B

Individual Dune Inventory Sheets

NL1  NL2  NL3  NL4  NL4A  NL6  NL7  NL8  NL9  NL10  NL11  NL11A
NL12  NL14  NL15  NL17  NL19  NL20  NL21  NL22  NL22A  NL23A  NL23B  NL26
NL27  NL28  NL30  NL31  NL32  NL33  NL34  NL35  NL36  NL37  NL38  NL40
NL42  NL43  NL43A  NL43B  NL45  NL46  NL47  NL48  NL49  NL50  NL51  NL52
NL54  NL55  NL58  NL59  NL61  NL62  NL63  NL67  NL70  NL73  NL78
**Site Information**

1. **Date Surveyed:** 05 AUG 1999
2. **Central Coordinates:**
   - N: 499,900 ft
   - E: 2,630,850 ft
3. **Profile Coordinates:**
   - N: 499,900 ft
   - E: 2,630,850 ft
4. **Site Length:** 140 ft
5. **Ownership:** Private

**Site Parameters**

6. **Type:** Natural
7. **Fetch Exposure:** Open Bay
8. **Shoreline Direction of Face:** East
9. **Nearshore Gradient:** >3,000 ft
10. **Morphologic Setting:** Isolated <500 ft Alongshore/Linear
11. **Relative Stability:** Accretionary
12. **Underlying Substrate:** Marsh
13. **Structure or Fill:** N/A

**Site Measurements**

14. **Crest Elevation (ft MLW):** 3.9
15. **Extent from Crest: Landward (ft):** 25
16. **Extent from Crest: To MLW (ft):** 86
17. **Crest Elevation (ft MLW):** N/A
18. **Extent between Second and Primary Crest (ft):** N/A
19. **Second Crest - Landward (ft):** N/A

**Vegetation Communities**

20. **Primary Dune:**
    - *Spartina patens* (saltmeadow hay)
    - *Panicum virgatum* (switch grass)
    - *Solidago Sempervirens* (seaside goldenrod)
21. **Secondary Dune:** N/A

**Remarks:**

Site NL1 is a small dune feature along a low marsh shoreline at the mouth of Barnes Creek.
NORTHUMBERLAND COUNTY DUNE SITE 2

Site Information
1. Date Surveyed: 05 AUG 1999
2. Central Coordinates:
   N: 501,100 ft
   E: 2,634,800 ft
Virginia South State Plane Grid NAD 1927 [4502]
3. Profile Coordinates:
   N: 501,100 ft
   E: 2,634,800 ft
4. Site Length: 210 ft
5. Ownership: Private

Site Parameters
6. Type: Natural
7. Fetch Exposure: Open Bay
8. Shoreline Direction of Face: South
9. Nearshore Gradient: >3,000 ft
10. Morphologic Setting: Isolated <500 ft Alongshore/Pocket
11. Relative Stability: Stable
12. Underlying Substrate: Marsh
13. Structure or Fill: N/A

Site Measurements
14. Primary Dune Crest Elevation (ft MLW): 5.1
15. Extent from Crest - Landward (ft): 45
16. Extent from Crest - To MLW (ft): 36
Secondary Dune: None
17. Primary Dune Crest Elevation (ft MLW): N/A
18. Extent between Second and Primary Crest (ft): N/A
19. Secondary Dune - Landward (ft): N/A

Vegetation Communities
20. Primary Dune:
   Spartina patens (saltmeadow hay)
   Cakile edentulata (sea rocket)
   Panicum virgatum (switch grass)
   Solidago sempervirens (seaside goldenrod)
   Panicum amarum (running beach grass)
21. Secondary Dune: N/A

Remarks:
Site NL2 is across the mouth of Barnes Creek from NL1. These sites were formed when the sand barrier across Barnes Creek was breached, and the sand migrated up each shore inside Barnes Creek.

Looking west across the mouth of Barnes Creek.
Not intended for use in determining legal jurisdictional limits.

Looking east. Note the peat outcrops that make dune definitions difficult (i.e. Not a continuous sand body from MLW landward).
### Site Information

1. **Date Surveyed:** 05 AUG 1999
2. **Central Coordinates:**
   - N: 503,000 ft
   - E: 2,635,950 ft
   Virginia South State Plane Grid NAD 1927 [4502]
3. **Profile Coordinates:**
   - N: 503,000 ft
   - E: 2,635,950 ft
4. **Site Length:** 250 ft
5. **Ownership:** Private
6. **Type:** Natural
7. **Fetch Exposure:** Open Bay
8. **Shoreline Direction of Face:** Southeast
9. **Nearshore Gradient:** >3,000 ft
10. **Morphologic Setting:** Creek mouth Barrier/Spit
11. **Relative Stability:** Stable
12. **Underlying Substrate:** Marsh
13. **Structure or Fill:** N/A

### Site Parameters

- **Type:** Natural
- **Fetch Exposure:** Open Bay
- **Shoreline Direction of Face:** Southeast
- **Nearshore Gradient:** >3,000 ft
- **Morphologic Setting:** Creek mouth Barrier/Spit
- **Relative Stability:** Stable
- **Underlying Substrate:** Marsh
- **Structure or Fill:** N/A

### Site Measurements

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<th>Primary Dune</th>
<th></th>
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<tr>
<td>15. Extent from Crest: Landward (ft):</td>
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<td>16. Extent from Crest: To MLW (ft):</td>
<td>71</td>
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<table>
<thead>
<tr>
<th>Secondary Dune</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
</tr>
</tbody>
</table>

17. **Crest Elevation (ft MLW):** N/A
18. **Extent between Second and Primary Crest (ft):** N/A
19. **Second Crest - Landward (ft):** N/A

### Vegetation Communities

- **Primary Dune:**
  - *Spartina patens* (saltmeadow hay)
  - *Ammophila breviligulata* (American beach grass)
  - *Panicum virgatum* (switch grass)

21. **Secondary Dune:** N/A

### Remarks

NL 3 sits within a sand and marsh shore across the mouth of a small creek just south of Bluff Point. The beach and dune are perched on a peat terrace in many places along this stretch of shore. The jurisdictional dune occurs where the dune/beach continuum goes to MLW.

---

**Looking east along site.**

**Not intended for use in determining legal jurisdictional limits.**

**Looking west at a defining peat headland.**

**05 AUG 1999**
NL4 was recognized as a secondary dune system at risk by Varnell and Hardaway (2002). The site occurred on a large sand spit across the adjacent creek mouth and had evolved into a large dune field. It may have reached a relative state dynamic of equilibrium as a curvilinear shore planform.
NORTHUMBERLAND COUNTY DUNE SITE 4A

Site Information
1. Date Surveyed: 05 AUG 1999
2. Central Coordinates:
   - N 509,700 ft
   - E 2,633,300 ft
3. Profile Coordinates:
   - N 509,700 ft
   - E 2,633,300 ft
Virginia South State Plane Grid NAD 1927 [4502]
4. Site Length: 580 ft
5. Ownership: Private

Site Parameters
6. Type: Natural
7. Fetch Exposure: Open Bay
8. Shoreline Direction of Face: Northeast
9. Nearshore Gradient: 1,000 to 3,000 ft
10. Morphologic Setting: Spit
11. Relative Stability: Stable
12. Underlying Substrate: Marsh
13. Structure or Fill: N/A

Site Measurements
14. Crest Elevation (ft MLW): 4.4
15. Extent from Crest: Landward (ft): 69
16. Extent from Crest: To MLW (ft): 36
Secondary Dune: None
17. Crest Elevation (ft MLW): N/A
18. Extent between Second and Primary Crest (ft): N/A
19. Second Crest - Landward (ft): N/A

Vegetation Communities
20. Primary Dune: Spartina patens (saltmeadow hay)
   Cakile edentulata (sea rocket)
   Panicum virginatum (switch grass)
21. Secondary Dune: N/A

Remarks:
NL4A has evolved in a similar fashion as Site NL4, where a sand berm/spit has migrated landward across a tidal creek drainage. A breach in this barrier occurred between 1998 and 1999, further altering the morphology of the dune feature.

Not intended for use in determining legal jurisdictional limits.
NORTHUMBERLAND COUNTY DUNE SITE 6

Site Information
1. Date Surveyed: 05 AUG 1999
2. Central Coordinates: 
   N: 511,700 ft 
   E: 2,630,400 ft
3. Profile Coordinates: 
   N: 511,700 ft 
   E: 2,630,400 ft
Virginia South State Plane Grid NAD 1927 [4502]
4. Site Length: 180 ft
5. Ownership: Private

Site Parameters
6. Type: Man Influenced
7. Fetch Exposure: Open Bay
8. Shoreline Direction of Face: Northeast
9. Nearshore Gradient: 0 to 1,000 ft
10. Morphologic Setting: Isolated <500 ft Alongshore/Shallow Bay
11. Relative Stability: Stable
12. Underlying Substrate: Upland
13. Structure or Fill: Revetments

Site Measurements
14. Crest Elevation (ft MLW): 5.5
15. Extent from Crest: Landward (ft): 6
16. Extent from Crest: To MLW (ft): 71

Primary Dune:
Secondary Dune: None
17. Crest Elevation (ft MLW): N/A
18. Extent between Second and Primary Crest (ft): N/A
19. Second Crest - Landward (ft): N/A

Vegetation Communities
20. Primary Dune: 
   Ammophila breviligulata (American beach grass)
   Panicum virgatum (switch grass)
21. Secondary Dune: N/A

Remarks:
NL 6 resides between 2 stone revetments that control each end. This low dune buffers the adjacent upland from storm waves.

Not intended for use in determining legal jurisdictional limits.
Looking west at the downstream side of the spit which has an eroding scarp. Arrow denotes profile location.

Looking south at the upstream side of the spit which has a stable beach and dune.

NORTHUMBERLAND COUNTY DUNE SITE 7

Site Information
1. Date Surveyed: 05 AUG 1999
2. Central Coordinates: N: 518,750 ft  E: 2,629,500 ft
   Virginia South State Plane Grid NAD 1927 (4502)
3. Profile Coordinates: N: 518,750 ft  E: 2,629,500 ft
4. Site Length: 320 ft
5. Ownership: Private

Site Parameters
6. Type: Natural
7. Fetch Exposure: Riverine
8. Shoreline Direction of Face: Southeast
9. Nearshore Gradient: 0 to 1,000 ft
10. Morphologic Setting: Spit
11. Relative Stability: Stable
12. Underlying Substrate: Marsh
13. Structure or Fill: N/A

Site Measurements
14. Crest Elevation (ft MLW): 4.2
15. Extent from Crest: Landward (ft): 23
16. Extent from Crest: To MLW (ft): 45
17. Crest Elevation (ft MLW): N/A
18. Extent between Second and Primary Crest (ft): N/A
19. Second Crest - Landward (ft): N/A

Vegetation Communities
20. Primary Dune: Spartina patens (saltmeadow hay)
21. Secondary Dune: N/A

Remarks:
NL 7 occurs as a delta-shaped spit that is exposed to a bimodel wind/wave climate along the north shore of Dividing Creek.

Not intended for use in determining legal jurisdictional limits.
NORTHUMBERLAND COUNTY DUNE SITE 8

Site Information
1. Date Surveyed: 05 AUG 1999
2. Central Coordinates: N: 517,350 ft E: 2,632,050 ft
   Virginia South State Plane Grid NAD 1927 [4502]
3. Profile Coordinates: N: 517,350 ft E: 2,632,050 ft
4. Site Length: 270 ft
5. Ownership: Private plate: 2A

Site Parameters
6. Type: Natural
7. Fetch Exposure: Riverine, Bay influenced
8. Shoreline Direction of Face: South
9. Nearshore Gradient: 0 to 1,000 ft (Some SAV)
10. Morphologic Setting: Spit
11. Relative Stability: Stable/Accretionary
12. Underlying Substrate: Marsh/Creek Bottom
13. Structure or Fill: N/A

Site Measurements
14. Crest Elevation (ft MLW): 4.8
15. Extent from Crest - Landward (ft): 19
16. Extent from Crest - To MLW (ft): 18
17. Crest Elevation (ft MLW): N/A
18. Extent between Second and Primary Crest (ft): N/A
19. Second Crest - Landward (ft): N/A

Vegetation Communities
20. Primary Dune:
   Spartina patens (saltmeadow hay)
   Panicum virgatum (switch grass)
   Solidago sempervirens (seaside goldenrod)

21. Secondary Dune: N/A

22. Remarks:
NL8 has evolved over time as a protruding spit that was formed by sand driven up Dividing Creek by a Bay dominated wind/wave climate.

Looking eastward toward the land attachment.
Looking westward toward the distal end of the spit.

Not intended for use in determining legal jurisdictional limits.
**NORTHUMBERLAND COUNTY DUNE SITE 9**

**Site Information**

1. **Date Surveyed:** 05 AUG 1999
2. **Central Coordinates:**
   - N: 518,350 ft
   - E: 2,633,700 ft
   - Virginia South State Plane Grid NAD 1927 [4502]
3. **Profile Coordinates:**
   - N: 518,350 ft
   - E: 2,633,700 ft
4. **Site Length:** 2,200 ft
5. **Ownership:** Private

**Site Parameters**

6. **Type:** Natural
7. **Fetch Exposure:** Open Bay
8. **Shoreline Direction of Face:** East
9. **Nearshore Gradient:** 1,000 to 3,000 ft
10. **Morphologic Setting:** Dune Field >500 ft Alongshore/Linear
11. **Relative Stability:** Stable
12. **Underlying Substrate:** Marsh
13. **Structure or Fill:** N/A

**Site Measurements**

- **Primary Dune:**
  - Primary Crest Elevation (ft MLW): 6.3
  - Extent from Crest: Landward (ft): 31
  - Extent from Crest: To MLW (ft): 40
- **Secondary Dune:** None
  - **Secondary Crest:**
    - Elevation (ft MLW): N/A
    - Extent between Second and Primary Crest (ft): N/A
    - Second Crest - Landward (ft): N/A

**Vegetation Communities**

- **Primary Dune:**
  - Spartina patens (saltmeadow hay)
  - Cakile edentulata (sea rocket)
  - Panicum virgatum (switch grass)

- **Secondary Dune:** N/A

**Remarks:**

NL9 has 3 subreaches. The south section is a washover feature across a marsh. The central section occurs along a wooded upland, and the northern section is similar to the southern section. The profile is located at the transition between the central section and the northern section.
NORTHUMBERLAND COUNTY DUNE SITE 10

Site Information
1. Date Surveyed: 05 AUG 1999
2. Central Coordinates: N: 522,300 ft E: 2,631,350 ft
3. Profile Coordinates: N: 522,300 ft E: 2,631,350 ft
4. Site Length: 1,360 ft
5. Ownership: Private
6. Type: Natural
7. Fetch Exposure: Open Bay
8. Shoreline Direction of Face: Northeast
9. Nearshore Gradient: 1,000 to 3,000 ft (Some SAV)
10. Morphologic Setting: Dune Field >500 ft Alongshore
    Shallow Bay
11. Relative Stability: Land Transgressive/Erosional
12. Underlying Substrate: Marsh
13. Structure or Fill: N/A
14. Crest Elevation (ft MLW): 5.7
15. Extent from Crest: Landward (ft): 40
16. Extent from Crest: To MLW (ft): 52
17. Crest Elevation (ft MLW): N/A
18. Extent between Second and Primary Crest (ft): N/A
19. Second Crest - Landward (ft): N/A
20. Primary Dune: Spartina patens (saltmeadow hay)
    Cakile edentulata (sea rocket)
    Panicum virgatum (switch grass)
21. Secondary Dune: N/A
22. Remarks: Site NL10 resides in a large embayment called Ingram Cove. The dune field occurs on the north half of the cove and crosses the drainage area of two tidal creeks.

Looking southward. The boat is moored at the profile location. Not intended for use in determining legal jurisdictional limits.

Looking northward. The boat is moored at the profile location. The beach is covered with SAV detritus from adjacent grass beds.
NORTHUMBERLAND COUNTY DUNE SITE 11

**Site Information**
1. **Date Surveyed:** 14 Sep 1999
2. **Central Coordinates:**
   - N: 528,200 ft
   - E: 2,633,300 ft
3. **Profile Coordinates:**
   - N: 528,200 ft
   - E: 2,633,300 ft
   - Virginia South State Plane Grid NAD1927 [4502]
4. **Site Length:** 200 ft
5. **Ownership:** Private

**Site Parameters**
6. **Type:** Natural
7. **Fetch Exposure:** Open Bay
8. **Shoreline Direction of Face:** East
9. **Nearshore Gradient:** 1,000 to 3,000 ft
10. **Morphologic Setting:** Isolated <500 ft Alongshore/Pocket
11. **Relative Stability:** Land Transgressive/Erosional
12. **Underlying Substrate:** Marsh
13. **Structure or Fill:** N/A

**Site Measurements**

**Primary Dune:**
14. **Crest Elevation (ft MLW):** 3.3
15. **Extent from Crest to Landward (ft):** 47
16. **Extent from Crest to MLW (ft):** 39

**Secondary Dune:** None
17. **Crest Elevation (ft MLW):** N/A
18. **Extent between Second and Primary Crest (ft):** N/A
19. **Second Crest - Landward (ft):** N/A

**Vegetation Communities**
20. **Primary Dune:**
   - Panicum virgatum (switch grass)
   - Panicum amarum (running beach grass)

21. **Secondary Dune:** N/A

**Remarks:**
NL11 is a small pocket beach and dune bounded by marsh headlands. The site is essentially a vegetated washover.

Not intended for use in determining legal jurisdictional limits.
### NORTHUMBERLAND COUNTY DUNE SITE 11A

**Site Information**

1. **Date Surveyed:** 14 Sep 1999
2. **Central Coordinates:**
   - N: 528,550 ft
   - E: 2,633,500 ft
3. **Profile Coordinates:**
   - N: 528,550 ft
   - E: 2,633,500 ft
4. **Site Length:** 400 ft
5. **Ownership:** Private
6. **Type:** Natural
7. **Fetch Exposure:** Open Bay
8. **Shoreline Direction of Face:** East
9. **Nearshore Gradient:** 1,000 to 3,000 ft
10. **Morphologic Setting:** Isolated <500 ft Alongshore/Pocket
11. **Relative Stability:** Land Transgressive/Erosional
12. **Underlying Substrate:** Marsh
13. **Structure or Fill:** N/A

**Site Parameters**

- **SiteMeasurements**
  - **Primary Dune:**
    - Crest Elevation (ft MLW): 4.3
    - Extent from Crest: Landward (ft): 22
    - Extent from Crest: To MLW (ft): 66
  - **Secondary Dune:** None
  - **Crest Elevation (ft MLW):** N/A
  - **Extent between Second and Primary Crest (ft):** N/A
  - **Second Crest - Landward (ft):** N/A

- **Vegetation Communities**
  - **Primary Dune:**
    - *Spartina patens* (salt meadow hay)
    - *Panicum virgatum* (switch grass)
  - **Secondary Dune:** N/A

- **Remarks:**
  - NL11A lies just north of NL11 and shares a common marsh headland boundary. It, too, is an isolated pocket beach and dune.

---

**Not intended for use in determining legal jurisdictional limits.**
NORTHUMBERLAND COUNTY DUNE SITE 12

**Site Information**
1. Date Surveyed: 14 Sep 1999
2. Central Coordinates:
   - N: 530,200 ft
   - E: 2,632,900 ft
3. Profile Coordinates:
   - N: 530,200 ft
   - E: 2,632,900 ft
4. Site Length: 450 ft
5. Ownership: Private
6. Type: Natural
7. Fetch Exposure: Open Bay
8. Shoreline Direction of Face: East
9. Nearshore Gradient: 1,000 to 3,000 ft (SAV)
10. Morphologic Setting: Creek Mouth Barrier/Spit
11. Relative Stability: Stable
12. Underlying Substrate: Marsh
13. Structure or Fill: N/A

**Site Parameters**

**Site Measurements**

**Primary Dune**
14. Crest Elevation (ft MLW): 6.8
15. Extent from Crest: Landward (ft): 17
16. Extent from Crest: To MLW (ft): 56

**Secondary Dune**
17. Crest Elevation (ft MLW): N/A
18. Extent between Second and Primary Crest (ft): N/A
19. Second Crest - Landward (ft): N/A

**Vegetation Communities**
20. Primary Dune:
   - Ammophila breviligulata (American beach grass)
   - Spartina patens (saltmeadow hay)

21. Secondary Dune: N/A

22. Remarks:
The alongshore limits of site NL12 is controlled, in part, by marsh headlands. It is also migrating landward across a small watershed and “trapping” a tidal pond. This pond has a small drainage channel that flows into the Bay on the south end of the site.

Not intended for use in determining legal jurisdictional limits.
NORTHUMBERLAND COUNTY DUNE SITE 14

Site Information
1. Date Surveyed: 14 Sep 1999
2. Central Coordinates: N: 533,150 ft E: 2,634,150 ft
   Virginia South State Plane Grid NAD 1927 [4502]
3. Profile Coordinates: N: 533,150 ft E: 2,634,150 ft
4. Site Length: 510 ft
5. Ownership: Private
6. Type: Natural
7. Fetch Exposure: Open Bay
8. Shoreline Direction of Face: East
9. Nearshore Gradient: >3,000 ft (Heavy SAV)
10. Morphologic Setting: Isolated <500 ft Alongshore/Pocket
11. Relative Stability: Stable
12. Underlying Substrate: Marsh
13. Structure or Fill: N/A
14. Crest Elevation (ft MLW): 5.5
15. Extent from Crest: Landward (ft): 37
16. Extent from Crest: To MLW (ft): 41
17. Crest Elevation (ft MLW): N/A
18. Extent between Second and Primary Crest (ft): N/A
19. Second Crest - Landward (ft): N/A
20. Primary Dune: Spartina patens (saltmeadow hay)
21. Secondary Dune: N/A
22. Remarks:
   Although NL14 is over 500 ft long it is listed as an isolated pocket beach and dune. It is an open bay site, but it is also partially protected by the Damron Marsh headland to the north. This site is controlled by a large contiguous marsh headland to the south.

Not intended for use in determining legal jurisdictional limits.
NL15 is a dune field on the north side of Dameron Marsh. It is controlled by a marsh headland to the east and a smaller headland to the west.
### Site Information

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td>1. Date Surveyed:</td>
<td>14 Sep 1999</td>
</tr>
</tbody>
</table>
| 2. Central Coordinates: | N: 536,200 ft  
E: 2,633,200 ft |
| 3. Profile Coordinates: | N: 536,200 ft 
E: 2,633,200 ft |
| 4. Site Length: | 250 ft |
| 5. Ownership: | Private |
| 6. Type: | Natural |
| 7. Fetch Exposure: | Riverine, Bay Influenced |
| 8. Shoreline Direction of Face: | Northwest |
| 9. Nearshore Gradient: | 0 to 1,000 ft |
| 10. Morphologic Setting: | Spit |
| 11. Relative Stability: | Land Transgressive/Erosional |
| 12. Underlying Substrate: | Upland |
| 13. Structure or Fill: | N/A |

### Site Parameters

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<table>
<thead>
<tr>
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<td>15. Extent from Crest: Landward (ft):</td>
<td>81</td>
</tr>
<tr>
<td>16. Extent from Crest: To MLW (ft):</td>
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### Site Measurements

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<tbody>
<tr>
<td>17. Crest Elevation (ft MLW):</td>
<td>N/A</td>
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<tr>
<td>18. Extent between Second and Primary Crest (ft):</td>
<td>N/A</td>
</tr>
<tr>
<td>19. Second Crest - Landward (ft):</td>
<td>N/A</td>
</tr>
</tbody>
</table>

### Vegetation Communities

- Spartina patens (saltmeadow hay)
- Panicum virgatum (switch grass)

### Remarks

- NL17 is a small dune on the distal end of a spit. This spit appears to be in a state of decay, and NL17 may have been a larger feature in the recent past.
Site Information
1. Date Surveyed: 14 Sep 1999
2. Central Coordinates: N: 538,900 ft  E: 2,632,200 ft
3. Profile Coordinates: N: 538,900 ft  E: 2,632,200 ft
4. Site Length: 1,050 ft
5. Ownership: Private
6. Type: Natural
7. Fetch Exposure: Open Bay
8. Shoreline Direction of Face: East
9. Nearshore Gradient: 0 to 1,000 ft
10. Morphologic Setting: Dune Field >500 ft Alongshore/Linear
11. Relative Stability: Land Transgressive/Erosional
12. Underlying Substrate: Upland
13. Structure or Fill: N/A

Site Parameters
14. Crest Elevation (ft MLW): 5.4
15. Extent from Crest: Landward (ft): 33
16. Extent from Crest To MLW (ft): 39
17. Crest Elevation (ft MLW): N/A
18. Extent between Second and Primary Crest (ft): N/A
19. Second Crest - Landward (ft): N/A
20. Primary Dune: Spartina patens (saltmeadow hay) shrub/woody
21. Secondary Dune: N/A

Vegetation Communities

22. Remarks:
Site NL19 is a semi-continuous dune field that was in a state of erosion and retreat during the site visit. Salt bushes along the bayward edge were evidence that the “controlling” marsh headlands were being lost to erosion.
NORTHUMBERLAND COUNTY DUNE SITE 20

Site Information
1. Date Surveyed: 14 Sep 1999
2. Central Coordinates:
   N: 542,150 ft
   E: 2,633,400 ft
Virginia South State Plane Grid NAD1927 (4502)
3. Profile Coordinates:
   N: 542,150 ft
   E: 2,633,400 ft
4. Site Length: 290 ft
5. Ownership: Private
6. Type: Man Influenced
7. Fetch Exposure: Open Bay
8. Shoreline Direction of Face: East
9. Nearshore Gradient: 1,000 to 3,000 ft
10. Morphologic Setting: Isolated, 500 ft Alongshore/Linear
11. Relative Stability: Accretionary
12. Underlying Substrate: Upland
13. Structure or Fill: Revetment and Jetty

Site Parameters
14. Crest Elevation (ft MLW): 5.8
15. Extent from Crest: Landward (ft): 50
16. Extent from Crest: To MLW (ft): 38
Secondary Dune: None
17. Crest Elevation (ft MLW): N/A
18. Extent between Second and Primary Crest (ft): N/A
19. Second Crest - Landward (ft): N/A

Site Measurements
Primary Dune:
20. Primary Dune: Spartina patens (saltmeadow hay)
   Panicum amarum (running beach grass)
   Solidago sempervirens (seaside goldenrod)
21. Secondary Dune: N/A

Vegetation Communities
22. Remarks:
   NL20 has accreted along the south channel jetty at Towles Creek. It is controlled on the south end by a revetment.

Looking south. Note the revetments in the background.

Looking north. Note the jetty in the background.

Not intended for use in determining legal jurisdictional limits.
### Site Information

1. Date Surveyed: 29 Apr 1999  
2. Central Coordinates:  
   N: 547,380 ft  
   E: 2,632,250 ft  
   Virginia South State Plane Grid NAD 1927 [4502]  
3. Profile Coordinates:  
   N: N/A  
   E: N/A  
4. Site Length: 170 ft  
5. Ownership: Private  
6. Type: Natural  
7. Fetch Exposure: Riverine, Bay Influenced  
8. Shoreline Direction of Face: East  
9. Nearshore Gradient: 0 to 1,000 ft  
10. Morphologic Setting: Isolated/Linear  
11. Relative Stability: Stable  
12. Underlying Substrate: Upland  
13. Structure or Fill:  

### Site Parameters

14. Crest Elevation (ft MLW): Not Profiled  
15. Extent from Crest: Landward (ft): N/A  
16. Extent from Crest: To MLW (ft): N/A  
Secondary Dune: None  
17. Crest Elevation (ft MLW): N/A  
18. Extent between Second and Primary Crest (ft): N/A  
19. Second Crest - Landward (ft): N/A  

### Vegetation Communities

20. Primary Dune: Spartina patens (saltmeadow hay)  
21. Secondary Dune: N/A  

22. Remarks:  
A pocket dune with a very low berm near the mouth of Cranes Creek.
NORTHUMBERLAND COUNTY DUNE SITE 22

1. Date Surveyed: 29 Apr 1999
2. Central Coordinates:
   N: 548,600 ft
   E: 2,633,150 ft
3. Profile Coordinates:
   N: 548,600 ft
   E: 2,633,150 ft
4. Site Length: 390 ft
5. Ownership: Private
6. Type: Man Influenced
7. Fetch Exposure: Riverine, Bay Influenced
8. Shoreline Direction of Face: East
9. Nearshore Gradient: 1,000 to 3,000 ft
10. Morphologic Setting: Creek Mouth Barrier/Spit
11. Relative Stability: Stable
12. Underlying Substrate: Marsh
13. Structure or Fill: Groin, Revetment and Beach Fill.

Site Parameters

Site Measurements

Primary Dune:
14. Crest Elevation (ft MLW): 4.0
15. Extent from Crest - Landward (ft): 35
16. Extent from Crest to MLW (ft): 27
Secondary Dune:
None
17. Crest Elevation (ft MLW): N/A
18. Extent between Second and Primary Crest (ft): N/A
19. Second Crest - Landward (ft): N/A

Vegetation Communities

20. Primary Dune:
   Spartina patens (saltmeadow hay)
   Panicum virgatum (switch grass)
   Ammophila breviligulata (American beach grass)
   Solidago sempervirens (seaside goldenrod)
21. Secondary Dune: N/A

Remarks:
NL 22 sits on the bay side of Sandy Point. Several low wood groins control the beach on the south end. A stone sill bounds the north end of the site. The site was nourished with sand from a channel dredging project about 15 years ago.

Not intended for use in determining legal jurisdictional limits.
**Site Information**

1. Date Surveyed: 29 Apr 1999
2. Central Coordinates:
   - N: 548,900 ft
   - E: 2,632,950 ft
3. Profile Coordinates:
   - N: 548,900 ft
   - E: 2,632,950 ft

Virginia South State Plane Grid NAD1927 [4502]

4. Site Length: 160 ft
5. Ownership: Private

**Site Parameters**

6. Type: Natural
7. Fetch Exposure: Riverine
8. Shoreline Direction of Face: Northwest
9. Nearshore Gradient: 0 to 1,000 ft
10. Morphologic Setting: Spit
11. Relative Stability: Stable
12. Underlying Substrate: Upland
13. Structure or Fill: N/A

**Site Measurements**

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Primary Dune:</td>
<td></td>
</tr>
<tr>
<td>14. Crest Elevation (ft MLW):</td>
<td>3.5</td>
</tr>
<tr>
<td>15. Extent from Crest: Landward (ft):</td>
<td>10</td>
</tr>
<tr>
<td>16. Extent from Crest: To MLW (ft):</td>
<td>35</td>
</tr>
<tr>
<td>Secondary Dune:</td>
<td>None</td>
</tr>
<tr>
<td>17. Crest Elevation (ft MLW):</td>
<td>N/A</td>
</tr>
<tr>
<td>18. Extent between Second and Primary Crest (ft):</td>
<td>N/A</td>
</tr>
<tr>
<td>19. Second Crest - Landward (ft):</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Vegetation Communities**

20. Primary Dune: Spartina patens (saltmeadow hay)
21. Secondary Dune: N/A

**Remarks**

NL 22A is a low sandy terrace along the west side of Sandy Point. It faces northwest up the Great Wicomico River.

Not intended for use in determining legal jurisdictional limits.
**Site Information**

1. **Date Surveyed:** 13 May 1999
2. **Central Coordinates:**
   - N: 552,600 ft
   - E: 2,631,050 ft
3. **Profile Coordinates:**
   - N: 552,600 ft
   - E: 2,631,050 ft
   - Virginia South State Plane Grid NAD 1927 (4502)
4. **Site Length:** 300 ft
5. **Ownership:** Private
6. **Type:** Natural
7. **Fetch Exposure:** Riverine, Bay Influenced
8. **Shoreline Direction of Face:** West
9. **Nearshore Gradient:** 0 to 1,000 ft
10. **Morphologic Setting:** Spit
11. **Relative Stability:** Accretionary
12. **Underlying Substrate:** Upland
13. **Structure or Fill:** N/A

**Site Parameters**

- **Site Measurements**
  - **Primary Dune:**
    - Crest Elevation (ft MLW): 4.3
    - Extent from Crest: Landward (ft): 13
    - Extent from Crest: To MLW (ft): 52
  - **Secondary Dune:** None
    - Crest Elevation (ft MLW): N/A
    - Extent between Second and Primary Crest (ft): N/A
    - Second Crest - Landward (ft): N/A

**Vegetation Communities**

- **Primary Dune:**
  - Spartina patens (saltmeadow hay)
  - Ammophila breviligulata (American beach grass)
  - Panicum amarum (running beach grass)

- **Secondary Dune:** N/A

**Remarks:**

NL23A resides on the east side of Haynie Point which is a spit that has accreted over time as sand from adjacent eroding banks have been transported toward the southwest.
Not intended for use in determining legal jurisdictional limits.
NORTHUMBERLAND COUNTY DUNE SITE 26

Primary Dune Crest

Site Information
1. Date Surveyed: 13 May 1999
2. Central Coordinates: N: 550,000 ft, E: 2,637,150 ft
   Virginia South State Plane Grid NAD 1927 [4502]
3. Profile Coordinates:
   N: 550,000 ft, E: 2,637,150 ft
   Plate: 4B
4. Site Length: 120 ft
5. Ownership: Private

Site Parameters
6. Type: Man Influenced
7. Fetch Exposure: Riverine
8. Shoreline Direction of Face: Southwest
9. Nearshore Gradient: 1,000 to 3,000 ft
10. Morphologic Setting: Creek Mouth Barrier/Spit
11. Relative Stability: Stable
12. Underlying Substrate: Marsh
13. Structure or Fill: Groin

Site Measurements
14. Crest Elevation (ft MLW): 5.0
15. Extent from Crest: Landward (ft): 16
16. Extent from Crest to MLW (ft): 45
Secondary Dune: None
17. Crest Elevation (ft MLW): N/A
18. Extent between Second and Primary Crest (ft): N/A
19. Second Crest - Landward (ft): N/A

Vegetation Communities
20. Primary Dune:
   - Spartina patens (saltmeadow hay)
   - Panicum virgatum (switch grass)
   - Ammophila breviligulata (American beach grass)
21. Secondary Dune: N/A

Remarks:
NL26 is a small dune that is heavily man-influenced with rock revetments at the boundaries. Multiple groins are spaced alongshore and control the beach face movement.

Not intended for use in determining legal jurisdictional limits.
NORTHUMBERLAND COUNTY DUNE SITE 27

Primary Dune Crest

13 May 1999

Site Information
1. Date Surveyed: 13 May 1999
2. Central Coordinates: N: 549,300 ft E: 2,637,950 ft
   Virginia South State Plane Grid NAD 1927 [4502]
3. Profile Coordinates:
   N: 549,300 ft E: 2,637,950 ft
4. Site Length: 180 ft
5. Ownership: Private
6. Type: Natural
7. Fetch Exposure: Riverine, Bay Influenced
8. Shoreline Direction of Face: South
9. Nearshore Gradient: >3,000 ft
10. Morphologic Setting: Isolated <500 ft Alongshore/Pocket
11. Relative Stability: Stable
12. Underlying Substrate: Upland
13. Structure or Fill: N/A
14. Crest Elevation (ft MLW):
   Primary Dune: 4.6
   Secondary Dune: N/A
15. Extent from Crest: Landward (ft):
   Primary Dune: 14
   Secondary Dune: N/A
16. Extent from Crest: To MLW (ft):
   Primary Dune: 34
   Secondary Dune: N/A
17. Crest Elevation (ft MLW):
   Primary Dune: N/A
   Secondary Dune: N/A
18. Extent between Second and Primary Crest (ft):
   N/A
19. Second Crest - Landward (ft): N/A
20. Primary Dune:
   Vegetation Communities
   Spartina patens (saltmeadow hay)
21. Secondary Dune: N/A
22. Remarks:
   NL27 is a small pocket beach and dune that occurs in a natural setting. The site is in a cove with an upland headland to the east and a low marsh headland to the west.

Not intended for use in determining legal jurisdictional limits.
NORTHUMBERLAND COUNTY DUNE SITE 28

Site Information
1. Date Surveyed: 13 May 1999
2. Central Coordinates: Virginia South State Plane Grid NAD 1927 [4502]
   N: 546,150 ft  E: 2,641,050 ft
3. Profile Coordinates:
   N: 546,150 ft  E: 2,641,050 ft
   MLW
4. Site Length: 480 ft
5. Ownership: Private
   Plate: 4B

Site Parameters
6. Type: Man Influenced
7. Fetch Exposure: Open Bay
8. Shoreline Direction of Face: South
9. Nearshore Gradient: 1,000 to 3,000 ft
10. Morphologic Setting: Isolated <500 ft Alongshore/Salient
11. Relative Stability: Accretionary
12. Underlying Substrate: Upland
13. Structure or Fill: Groin

Site Measurements
15. Extent from Crest to Landward (ft): 15
16. Extent from Crest to MLW (ft): 30
17. Crest Elevation (ft MLW): N/A
18. Extent between Second and Primary Crest (ft): N/A
19. Second Crest - Landward (ft): N/A

Primary Dune:
20. Primary Dune:
   Spartina patens (saltmeadow hay)
   Solidago sempervirens (seaside goldenrod)

Secondary Dune:
21. Secondary Dune: N/A

Vegetation Communities

22. Remarks:
   NL 28 occurs along a shore salient at the distal end of Fleeton Neck.

Looking east toward the Chesapeake Bay from the east end of the site.

Looking west across the site.

Not intended for use in determining legal jurisdictional limits.
**NORTHUMBERLAND COUNTY DUNE SITE 30**

**Site Information**
1. Date Surveyed: 13 May 1999
2. Central Coordinates: N: 552,200 ft, E: 2,647,600 ft
   Virginia South State Plane Grid NAD 1927 (4502)
3. Profile Coordinates: N: 552,200 ft, E: 2,647,600 ft
4. Site Length: 250 ft
5. Ownership: Private

**Site Parameters**
6. Type: Man Influenced
7. Fetch Exposure: Open Bay
8. Shoreline Direction of Face: Southeast
9. Nearshore Gradient: >3,000 ft
10. Morphologic Setting: Isolated <500 ft Alongshore/Pocket
11. Relative Stability: Stable
12. Underlying Substrate: Upland
13. Structure or Fill: Groin/Revetment
14. Crest Elevation (ft MLW): 5.6
15. Extent from Crest: Landward (ft): 45
16. Extent from Crest: To MLW (ft): 85
17. Crest Elevation (ft MLW): N/A
18. Extent between Second and Primary Crest (ft): N/A
19. Second Crest - Landward (ft): N/A

**Site Measurements**

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<th>Secondary Dune</th>
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<tr>
<td>16. Extent from Crest: To MLW (ft):</td>
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<tr>
<td>17. Crest Elevation (ft MLW):</td>
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<tr>
<td>18. Extent between Second and Primary Crest (ft):</td>
<td>N/A</td>
</tr>
<tr>
<td>19. Second Crest - Landward (ft):</td>
<td>N/A</td>
</tr>
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</table>

**Vegetation Communities**

- Cakile edentulata (sea rocket)
- Spartina patens (saltmeadow hay)
- Ammophila breviligulata (American beach grass)

**Remarks:**
Sites NL 30, NL 31 & NL 32 all reside in a larger shore reach between Taskmakers Creek and the unnamed point to the north, that is controlled by a spur and groin. These sites are separated by non-dune shore, but the entire beach shares the same continuous beach zone. NL 30 is bounded on the south end by a revetment and by groins on the north where a low wooded upland intersects the beach shore.
NORTHUMBERLAND COUNTY DUNE SITE 31

Site Information

1. Date Surveyed: 29 Apr 1999
2. Central Coordinates: N: 552,850 ft E: 2,648,100 ft
3. Profile Coordinates: N: 552,850 ft E: 2,648,100 ft

Virginia South State Plane Grid NAD 1927 [4502]
4. Site Length: 620 ft
5. Ownership: Private
6. Type: Natural
7. Fetch Exposure: Open Bay
8. Shoreline Direction of Face: Southeast
9. Nearshore Gradient: >3,000 ft
10. Morphologic Setting: Creek Mouth Barrier/Spit
11. Relative Stability: Stable
12. Underlying Substrate: Upland
13. Structure or Fill: N/A

Site Parameters

15. Extent from Crest: Landward (ft): 39
16. Extent from Crest: To MLW (ft): 48

Secondary Dune: None
17. Crest Elevation (ft MLW): N/A
18. Extent between Second and Primary Crest (ft): N/A
19. Second Crest - Landward (ft): N/A

Site Measurements

Vegetation Communities

20. Primary Dune:
Solidago sempervirens (seaside goldenrod)
Ammophila breviligulata (American beach grass)
Spartina patens (saltmeadow hay)

21. Secondary Dune: N/A

Vegetation

22. Remarks:
NL31 is mostly stable, but the north end is erosional adjacent to an existing groin. See Site 30 for further discussion.

Not intended for use in determining legal jurisdictional limits.
**Site Information**

<p>| | |</p>
<table>
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<tr>
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</thead>
<tbody>
<tr>
<td><strong>1. Date Surveyed:</strong></td>
<td>13 May 1999</td>
</tr>
<tr>
<td><strong>2. Central Coordinates:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>N:</strong></td>
<td>553,400 ft</td>
</tr>
<tr>
<td><strong>E:</strong></td>
<td>2,648,700 ft</td>
</tr>
<tr>
<td><strong>3. Profile Coordinates:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>N:</strong></td>
<td>553,400 ft</td>
</tr>
<tr>
<td><strong>E:</strong></td>
<td>2,648,7100 ft</td>
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<td><strong>4. Site Length:</strong></td>
<td>360 ft</td>
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<tr>
<td><strong>5. Ownership:</strong></td>
<td>Private</td>
</tr>
<tr>
<td><strong>Plate:</strong></td>
<td>5A</td>
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**Site Parameters**

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>6. Type:</strong></td>
<td>Man Influenced</td>
</tr>
<tr>
<td><strong>7. Fetch Exposure:</strong></td>
<td>Open Bay</td>
</tr>
<tr>
<td><strong>8. Shoreline Direction of Face:</strong></td>
<td>Southeast</td>
</tr>
<tr>
<td><strong>9. Nearshore Gradient:</strong></td>
<td>&gt;3,000 ft</td>
</tr>
<tr>
<td><strong>10. Morphologic Setting:</strong></td>
<td>Creek Mouth Barrier/Spit</td>
</tr>
<tr>
<td><strong>11. Relative Stability:</strong></td>
<td>Stable</td>
</tr>
<tr>
<td><strong>12. Underlying Substrate:</strong></td>
<td>Upland</td>
</tr>
<tr>
<td><strong>13. Structure or Fill:</strong></td>
<td>Groin, Revetment and Beach Fill</td>
</tr>
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**Site Measurements**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Primary Dune:</strong></td>
<td>No Data</td>
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<tr>
<td><strong>14. Crest Elevation (ft MLW):</strong></td>
<td></td>
</tr>
<tr>
<td><strong>15. Extent from Crest - Landward (ft):</strong></td>
<td></td>
</tr>
<tr>
<td><strong>16. Extent from Crest - To MLW (ft):</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Secondary Dune:</strong></td>
<td>None</td>
</tr>
<tr>
<td><strong>17. Crest Elevation (ft MLW):</strong></td>
<td>N/A</td>
</tr>
<tr>
<td><strong>18. Extent between Second and Primary Crest (ft):</strong></td>
<td>N/A</td>
</tr>
<tr>
<td><strong>19. Second Crest - Landward (ft):</strong></td>
<td>N/A</td>
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</table>

**Vegetation Communities**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>20. Primary Dune:</strong></td>
<td>Panicum amarum (running beach grass)</td>
</tr>
<tr>
<td><strong>Panicum virgatum (switch grass)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Spartina patens (saltmeadow hay)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Ammophila breviligulata (American beach grass)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>21. Secondary Dune:</strong></td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Remarks:**

NL 32 is a northward extension of NL 31 except for an unvegetated washover at an intermittent tidal creek. The beach face is controlled by wood groins and bounded on the north by a revetment and spur/groin.
NORTHUMBERLAND COUNTY DUNE SITE 33

Site Information
1. Date Surveyed: 13 May 1999
2. Central Coordinates:
   N: 558,000 ft
   E: 2,649,300 ft
3. Profile Coordinates:
   N: 558,000 ft
   E: 2,649,300 ft
4. Site Length: 180 ft
5. Ownership: Private
6. Type: Man Influenced
7. Fetch Exposure: Open Bay
8. Shoreline Direction of Face: East
9. Nearshore Gradient: >3,000 ft (bars)
10. Morphologic Setting: isolated <500 ft Alongshore/Pocket
11. Relative Stability: Stable
12. Underlying Substrate: Upland
13. Structure or Fill: Revetment

Site Parameters
4. Plate: 5A

Site Measurements
14. Crest Elevation (ft MLW): 4.9
15. Extent from Crest: Landward (ft): 31
16. Extent from Crest: To MLW (ft): 63

Secondary Dune:
17. Crest Elevation (ftMLW): N/A
18. Extent between Second and Primary Crest (ft): N/A
19. Second Crest - Landward (ft): N/A

Vegetation Communities
20. Primary Dune:
   - Spartina patens (saltmeadow hay)
   - Panicum amarum (running beach grass)
   - Ammophila breviligulata (American beach grass)
   - Solidago sempervirens (seaside goldenrod)
   - Shrub/woody

21. Secondary Dune: N/A

Remarks:
NL33 is a pocket dune bounded on the south by a revetment and transforming to the north into a low, eroding upland bank. Site NL33, NL 34 and NL 35 all reside in low areas along what was once the west shore of Owens Pond. This shore reach was “protected” from the bay by a narrow barrier spit (in 1937). The spit eroded and the site is now exposed to the open bay.

Not intended for use in determining legal jurisdictional limits.
NL34 is bounded by two low eroding upland banks. Although relatively stable at the time of the site visit, the beach and dune will continue to evolve as the uplands erode.
NORTHUMBERLAND COUNTY DUNE SITE 35

Site Information
1. Date Surveyed: 13 May 1999
2. Central Coordinates: Virginia South State Plane Grid NAD1927 [4502]
   N: 560,100 ft  E: 2,649,600 ft
3. Profile Coordinates:
   N: 560,100 ft  E: 2,649,600 ft
4. Site Length: 280 ft
5. Ownership: Private
6. Type: Man Influenced
7. Fetch Exposure: Open Bay
8. Shoreline Direction of Face: East
9. Nearshore Gradient: 1,000 to 3,000 ft (bars)
10. Morphologic Setting: Isolated <500 ft Alongshore/Pocket
11. Relative Stability: Stable
12. Underlying Substrate: Upland
13. Structure or Fill: Revetment
14. Crest Elevation (ft MLW): 5.3
15. Extent from Crest: Landward (ft): 38
16. Extent from Crest: To MLW (ft): 75
17. Crest Elevation (ft MLW): N/A
18. Extent between Second and Primary Crest (ft): N/A
19. Second Crest - Landward (ft): N/A
20. Primary Dune:
   Ammophila breviligulata (American beach grass)
   Spartina patens (saltmeadow hay)
   Panicum amarum (running beach grass)
21. Secondary Dune: N/A
22. Remarks:
   NL 35 is a pocket dune similar in morphology to NL 33 and NL 34. It is bounded on both ends by revetments.

Not intended for use in determining legal jurisdictional limits.
NL36 is an isolated dune bounded on the south by a revetment and on the north by a low eroding upland. The site appeared erosional at the time of the site visit.
NORTHUMBERLAND COUNTY DUNE SITE 37

Site Information
1. Date Surveyed: 13 May 1999
2. Central Coordinates: N: 562,300 ft E: 2,650,550 ft
   Virginia South State Plane Grid NAD 1927 [4502]
3. Profile Coordinates: N: 562,300 ft E: 2,650,550 ft
4. Site Length: 240 ft
5. Ownership: Private

Site Parameters
6. Type: Man Influenced
7. Fetch Exposure: Open Bay
8. Shoreline Direction of Face: East
9. Nearshore Gradient: 1,000 to 3,000 ft (bars)
10. Morphologic Setting: Isolated < 500 ft Alongshore/Pocket
11. Relative Stability: Accretionary
12. Underlying Substrate: Upland
13. Structure or Fill: Groin and Revetment

Site Measurements
15. Extent from Crest - Landward (ft): 5
16. Extent from Crest - To MLW (ft): 66
17. Crest Elevation (ft MLW): N/A
18. Extent between Second and Primary Crest (ft): N/A
19. Second Crest - Landward (ft): N/A

Vegetation Communities
20. Primary Dune: Ammophila breviligulata (American beach grass)
   Spartina patens (saltmeadow hay)
21. Secondary Dune: N/A

Remarks:
NL37 is an isolated dune controlled by timber groins and bounded by a revetment on the south end. At the time of the site visit, sand was being deposited on the beach face, allowing characterization as accretionary. However, this did not appear to be a long-term trend, and, as such, this open bay site may be better characterized as stable.
NL 38 resides on a barrier spit feature that crosses the north side of Gaskin Pond. The site is controlled by a groin field.

Not intended for use in determining legal jurisdictional limits.
### Site Information

1. **Date Surveyed:** 29 Apr 1999
2. **Central Coordinates:**
   - N: 566,800 ft
   - E: 2,650,900 ft
3. **Profile Coordinates:**
   - N: 566,800 ft
   - E: 2,650,900 ft
4. **Site Length:** 600 ft
5. **Ownership:** Private

### Site Parameters

6. **Type:** Natural
7. **Fetch Exposure:** Open Bay
8. **Shoreline Direction of Face:** East
9. **Nearshore Gradient:** 1,000 to 3,000 ft
10. **Morphologic Setting:** Creek Mouth Barrier/Spit
11. **Relative Stability:** Stable
12. **Underlying Substrate:** Marsh
13. **Structure or Fill:** None

### Site Measurements

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crest Elevation (ft MLW)</td>
<td>4.5</td>
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<tr>
<td>Extent from Crest - Landward (ft)</td>
<td>25</td>
</tr>
<tr>
<td>Extent from Crest - To MLW (ft)</td>
<td>50</td>
</tr>
<tr>
<td>Crest Elevation (ft MLW)</td>
<td>None</td>
</tr>
<tr>
<td>Extent between Second and Primary Crest (ft)</td>
<td>N/A</td>
</tr>
<tr>
<td>Second Crest - Landward (ft)</td>
<td>N/A</td>
</tr>
</tbody>
</table>

### Vegetation Communities

20. **Primary Dune:**
   - Phragmites australis (reed grass)
   - Spartina patens (saltmeadow hay)

21. **Secondary Dune:** N/A

### Remarks

NL 40 occurs along a pocket beach across an old creek watershed with a very wide backshore region that may foster dune development in the future. The site is bounded on the south by revetments.

Not intended for use in determining legal jurisdictional limits.
Site Information
1. Date Surveyed: 29 Apr 1999
2. Central Coordinates:  
   N: 572,400 ft  
   E: 2,652,500 ft
3. Profile Coordinates:  
   N: 572,400 ft  
   E: 2,652,500 ft
Virginia South State Plane Grid NAD 1927 (4502)
4. Site Length: 3,690 ft
5. Ownership: Private

Site Parameters
6. Type: Man Influenced
7. Fetch Exposure: Open Bay
8. Shoreline Direction of Face: East
9. Nearshore Gradient: 1,000 to 3,000 ft
10. Morphologic Setting: Dune Field >500 ft Alongshore/Linear
11. Relative Stability: Stable
12. Underlying Substrate: Upland
13. Structure or Fill: Jetty

Site Measurements
14. Crest Elevation (ft MLW): 5.6
15. Extent from Crest: Landward (ft): 69
16. Extent from Crest: To MLW (ft): 40

Secondary Dune:
17. Crest Elevation (ft MLW): 9.8
18. Extent between Second and Primary Crest (ft): 146
19. Second Crest - Landward (ft): 21

Vegetation Communities
20. Primary Dune:  
   Spartina patens (saltmeadow hay)  
   Panicum amarum (running beach grass)  
   Ammophila breviligulata (American beach grass)
21. Secondary Dune: Shrub/woody

Remarks:
Site NL 42 is a large dune field perched along the Bay south of the Little Wicomico River. This site has evolved through time as part of the Smith Point and Little Wicomico River Inlet shoal litoral system. Large fluctuations in shore position have occurred in the past, but now some relative stability exists along much of the site.
Site Information
1. Date Surveyed: 03 Jun 1999
2. Central Coordinates: N: 575,100 ft E: 2,651,150 ft
3. Profile Coordinates: N: 575,100 ft E: 2,651,150 ft
4. Site Length: 2,750 ft
5. Ownership: Private
6. Type: Man Influenced
7. Fetch Exposure: Open Bay
8. Shoreline Direction of Face: Northeast
9. Nearshore Gradient: 1,000 to 3,000 ft
10. Morphologic Setting: Dune Field >500 ft Alongshore/Linear
11. Relative Stability: Stable
12. Underlying Substrate: Marsh
13. Structure or Fill: Jetty

Site Parameters
14. Crest Elevation (ft MLW): 8.8
15. Extent from Crest: Landward (ft): 23
16. Extent from Crest: To MLW (ft): 48
17. Crest Elevation (ft MLW): 7.5
18. Extent between Second and Primary Crest (ft): 41
19. Secondary Crest - Landward (ft): 56

Vegetation Communities
20. Primary Dune:
   - Ammophila breviligulata (American beach grass)
   - Spartina patens (saltmeadow hay)
   - Cakile edentulata (sea rocket)
21. Secondary Dune:
   - Spartina patens (saltmeadow hay)
   - Solidago sempervirens (seaside goldenrod)

22. Remarks:
    Site NL43 is a large dune field on the Potomac River's northwesterly side of Smith Point at the entrance of the Little Wicomico River. It has three separate morphologic descriptions NL43, NL43A and NL43B. NL43 is the largest subreach that is bounded on the southeast by the Smith Point jetty and extends upriver about 2,800 ft where the beach narrows and the dune face is eroding (NL43A). This site has grown bayward over time. The secondary dune was once the primary dune.

Not intended for use in determining legal jurisdictional limits.
NORTHUMBERLAND COUNTY DUNE SITE 43A

Site Information

1. Date Surveyed: 03 Jun 1999
2. Central Coordinates: N: 575,950 ft  E: 2,650,000 ft
   Virginia South State Plane Grid NAD 1927 (4502)
3. Profile Coordinates: N: 575,950 ft  E: 2,650,000 ft
4. Site Length: 870 ft
5. Ownership: Private

Site Parameters

6. Type: Man Influenced
7. Fetch Exposure: Open Bay
8. Shoreline Direction of Face: Northeast
9. Nearshore Gradient: 1,000 to 3,000 ft
10. Morphologic Setting: Dune Field > 500 ft Alongshore/Linear Land Transgressive/Erosional
11. Relative Stability: Marsh
12. Underlying Substrate: Jetty
13. Structure or Fill: None

Site Measurements

14. Crest Elevation (ft MLW): 8.2
15. Extent from Crest: Landward (ft): 29
16. Extent from Crest: To MLW (ft): 34
17. Crest Elevation (ft MLW): 6.0
18. Extent between Second and Primary Crest (ft): 54
19. Second Crest - Landward (ft): 26

Vegetation Communities

20. Primary Dune:
   - Ammophila breviligulata (American beach grass)
   - Spartina patens (saltmeadow hay)
   - Cakile edentulata (sea rocket)
   - Panicum amarum (running beach grass)
21. Secondary Dune:
   - Spartina patens (saltmeadow hay)
   - Panicum amarum (running beach grass)

22. Remarks:
   NL 43A is the erosional subreach of the larger dune field. See NL 43 for further discussion.

Not intended for use in determining legal jurisdictional limits.
NORTHERNBERLAND COUNTY DUNE SITE 43B

Site Information
1. Date Surveyed: 03 Jun 1999
2. Central Coordinates: N: 576,650 ft E: 2,649,100 ft
3. Profile Coordinates: N: 576,650 ft E: 2,649,100 ft
   Virginia South State Plane Grid NAD 1927 [4502]
4. Site Length: 400 ft
5. Ownership: Private

Site Parameters
6. Type: Man Influenced
7. Fetch Exposure: Open Bay
8. Shoreline Direction of Face: Northeast
9. Nearshore Gradient: 1,000 to 3,000 ft
10. Morphologic Setting: Creek Mouth Barrier/Spit
11. Relative Stability: Land Transgressive/Erosional
12. Underlying Substrate: Marsh
13. Structure or Fill: Beach Fill

Site Measurements
14. Crest Elevation (ft MLW): 2.9
15. Extent from Crest: Landward (ft): 32
16. Extent from Crest: To MLW (ft): 28
17. Crest Elevation (ft MLW): N/A
18. Extent between Second and Primary Crest (ft): N/A
19. Second Crest - Landward (ft): N/A

Vegetation Communities
20. Primary Dune: Spartina patens (saltmeadow hay)
21. Secondary Dune: N/A

22. Remarks:
   NL43B is part of the low vegetative washover into the Little Wicomico River. A beach nourishment project occurred in 2000 utilizing sand dredged from Little Wicomico.

Not intended for use in determining legal jurisdictional limits.
NORTHUMBERLAND COUNTY DUNE SITE 45

### Site Information

1. **Date Surveyed:** 03 Jun 1999
2. **Central Coordinates:**
   - N: 577,750 ft
   - E: 2,648,100 ft
3. **Profile Coordinates:**
   - N: 577,750 ft
   - E: 2,648,100 ft
4. **Site Length:** 220 ft
5. **Ownership:** Private

### Site Parameters

6. **Type:** Man Influenced
7. **Fetch Exposure:** Open Bay
8. **Shoreline Direction of Face:** Northeast
9. **Nearshore Gradient:** 1,000 to 3,000 ft (bars)
10. **Morphologic Setting:** Creek Mouth Barrier/Spit
11. **Relative Stability:** Land Transgressive/Erosional
12. **Underlying Substrate:** Marsh
13. **Structure or Fill:** Revetment

### Site Measurements

14. **Crest Elevation (ft MLW):** 3.2
15. **Extent from Crest: Landward (ft):** 36
16. **Extent from Crest: To MLW (ft):** 35
17. **Crest Elevation (ft MLW):** N/A
18. **Extent between Second and Primary Crest (ft):** N/A
19. **Second Crest - Landward (ft):** N/A

### Vegetation Communities

20. **Primary Dune:** Spartina patens (saltmeadow hay)
21. **Secondary Dune:** N/A

### Remarks:

NL45 is a small pocket dune bounded on the southeast by a revetment and on the northwest by a low eroding upland bank with numerous fallen trees. A peat terrace intersects the beach face just below MLW. The site is an active washover with sparse vegetation.

---

[Diagram showing distance offshore and elevation with MLW marked.]

Not intended for use in determining legal jurisdictional limits.

---

[Northwest and southeast views of the site with marked coordinates and distance offshore.]

Plate: 6A
NORTHUMBERLAND COUNTY DUNE SITE 46

Site Information
1. Date Surveyed: 03 Jun 1999
2. Central Coordinates: N: 578,750 ft, E: 2,647,500 ft
3. Profile Coordinates: N: 578,750 ft, E: 2,647,500 ft
4. Site Length: 650 ft
5. Ownership: Private
6. Type: Man Influenced
7. Fetch Exposure: Open Bay
8. Shoreline Direction of Face: Northeast
9. Nearshore Gradient: 1,000 to 3,000 ft (extensive bars)
10. Morphologic Setting: Dune Field >500 ft Alongshore/Shallow Bay
11. Relative Stability: Stable
12. Underlying Substrate: Upland
13. Structure or Fill: Revetment, Groin and Breakwater

Site Parameters
14. Crest Elevation (ft MLW): 5.5
15. Extent from Crest: Landward (ft): 10
16. Extent from Crest: To MLW (ft): 52
17. Crest Elevation (ft MLW): N/A
18. Extent between Second and Primary Crest (ft): N/A
19. Second Crest - Landward (ft): N/A

Site Measurements
20. Primary Dune: Ammophila breviligulata (American beach grass)
   Cakile edentulata (sea rocket)
21. Secondary Dune: N/A

Vegetation Communities

03 JUN 1999
Looking northwest uptiver.

03 JUN 1999
Looking southeast downriver toward the dune.

NL46 evolved as the backshore grew in width within a large coastal embayment. This embayment is bounded on the upriver end by a large rock spur and groin field. On the downstream end, it is bounded by another large rock spur and revetment.

Not intended for use in determining legal jurisdictional limits.
03 Jun 1999

Looking upriver along the beach, upper berm, and primary dune face.

Looking downriver toward the groin field.

Not intended for use in determining legal jurisdictional limits.
NORTHUMBERLAND COUNTY DUNE SITE 48

Date Surveyed: 03 Jun 1999
Central Coordinates: Virginia South State Plane Grid NAD 1927 [4502]

Site Information
1. Date Surveyed: 03 Jun 1999
2. Central Coordinates:
   N: 582,450 ft
   E: 2,643,500 ft
3. Profile Coordinates:
   N: 582,450 ft
   E: 2,643,500 ft

Site Parameters
4. Site Length: 200 ft
5. Ownership: Private

Site Measurements
6. Type: Man Influenced
7. Fetch Exposure: Open Bay
8. Shoreline Direction of Face: Northeast
9. Nearshore Gradient: 1,000 to 3,000 ft (extensive bars)
10. Morphologic Setting: Isolated <500 ft Alongshore/Linear
11. Relative Stability: Stable
12. Underlying Substrate: Upland
13. Structure or Fill: Groin

Site Measurements
15. Extent from Crest: Landward (ft): 14
16. Extent from Crest: To MLW (ft): 58

Secondary Dune:
17. Crest Elevation (ft MLW): N/A
18. Extent between Second and Primary Crest (ft): N/A
19. Second Crest - Landward (ft): N/A

Vegetation Communities
20. Primary Dune:
   Ammophila breviligulata (American beach grass)
   Cakile edentulata (sea rocket)
   Panicum amarum (running beach grass)

21. Secondary Dune: N/A

Remarks:
NL48 has evolved over time within an extensive wood groin field along the Potomac River. These types of dunes have an upland backstop where dune growth is restricted by the groins and upland bank positions. Several other isolated dunes are similar within this groin field including NL49, NL50, NL51 and NL52.

N/A

Looking upriver.
Looking downriver.

Not intended for use in determining legal jurisdictional limits.
**NORTHUMBERLAND COUNTY DUNE SITE 49**

**Site Information**

| 1. Date Surveyed: | 03 Jun 1999 |
| 2. Central Coordinates: | N: 583,000 ft, E: 2,642,500 ft |
| 3. Profile Coordinates: | N: 583,000 ft, E: 2,642,500 ft |
| 4. Site Length: | 470 ft |
| 5. Ownership: | Private |

**Site Parameters**

| 6. Type: | Man Influenced |
| 7. Fetch Exposure: | Open Bay |
| 8. Shoreline Direction of Face: | Northeast |
| 9. Nearshore Gradient: | 1,000 to 3,000 ft (extensive bars) |
| 10. Morphologic Setting: | Isolated <500 ft Alongshore/linear |
| 11. Relative Stability: | Stable |
| 12. Underlying Substrate: | Upland |
| 13. Structure or Fill: | Groin |

**Site Measurements**

| 14. Crest Elevation (ft MLW): | 9.6 |
| 15. Extent from Crest: Landward (ft): | 3 |
| 16. Extent from Crest: To MLW (ft): | 51 |

**Secondary Dune:**

| 17. Crest Elevation (ft MLW): | N/A |
| 18. Extent between Second and Primary Crest (ft): | N/A |
| 19. Second Crest - Landward (ft): | N/A |

**Vegetation Communities**

- Ammophila breviligulata (American beach grass)
- Spartina patens (saltmeadow hay)
- Cakile edentulata (searocket)

| 20. Primary Dune: | N/A |
| 21. Secondary Dune: | N/A |

**Remarks:**

NL 49 is an isolated dune that has developed as the beach backshore widened and became stable probably due to the groin field.

---

Not intended for use in determining legal jurisdictional limits.
NORTHUMBERLAND COUNTY DUNE SITE 50

03 Jun 1999

Site Information
1. Date Surveyed: 03 Jun 1999
2. Central Coordinates: 583,450 ft N, 2,641,700 ft E
3. Profile Coordinates: 583,450 ft N, 2,641,700 ft E
   Virginia South State Plane Grid NAD 1927 (4502)
4. Site Length: 160 ft
5. Ownership: Private
   Plate: 6B

Site Parameters
6. Type: Man Influenced
7. Fetch Exposure: Open Bay
8. Shoreline Direction of Face: Northeast
9. Nearshore Gradient: 1,000 to 3,000 ft (Extensive Bars)
10. Morphologic Setting: Isolated >500 ft Alongshore/Linear
11. Relative Stability: Land Transgressive/Erosional
12. Underlying Substrate: Upland
13. Structure or Fill: Groin

Site Measurements
15. Extent from Crest - Landward (ft): 4
16. Extent from Crest - MLW (R): 56

Secondary Dune:
17. Crest Elevation (ft MLW): N/A
18. Extent between Second and Primary Crest (ft): N/A
19. Second Crest - Landward (ft): N/A

Vegetation Communities
20. Primary Dune:
   Ammophila breviligulata (American beach grass)
   Cakile edentulata (sea rocket)

21. Secondary Dune: N/A

22. Remarks:
   Site NL50 is another isolated groin field dune along the Potomac River.
NORTHUMBERLAND COUNTY DUNE SITE 51

Site Information
1. Date Surveyed: 24 Jun 1999
2. Central Coordinates: N: 583,800 ft, E: 2,640,850 ft
3. Profile Coordinates: N: 583,800 ft, E: 2,640,850 ft
Virginia South State Plane Grid NAD 1927 (4502)
4. Site Length: 190 feet
5. Ownership: Private

Site Parameters
6. Type: Man Influenced
7. Fetch Exposure: Open Bay
8. Shoreline Direction of Face: Northeast
9. Nearshore Gradient: 1,000 to 3,000 ft (Extensive Bars)
10. Morphologic Setting: Isolated >500 ft Alongshore/Linear
11. Relative Stability: Stable
12. Underlying Substrate: Upland
13. Structure or Fill: Groin

Site Measurements
15. Extent from Crest: Landward (ft): 4
16. Extent from Crest: To MLW (ft): 44
Secondary Dune: None
17. Crest Elevation (ft MLW): N/A
18. Extent between Second and Primary Crest (ft): N/A
19. Second Crest: Landward (ft): N/A

Vegetation Communities
20. Primary Dune: Ammophila breviligulata (American beach grass)
   Spartina patens (saltmeadow hay)
   Cakile edentulata (searocket)
   21. Secondary Dune: N/A

Remarks:
NL51 is a similar groin influenced dune site along this reach of
the Potomac River. In this case, the dune is bounded on each
end by groins but none occur along the site.

Looking northeast upriver.
Looking southeast downriver.

Not intended for use in determining legal jurisdictional limits.
**NORTHUMBERLAND COUNTY DUNE SITE 52**

**Site Information**
1. **Date Surveyed:** 24 Jun 1999
2. **Central Coordinates:**
   - N: 584,150 ft
   - E: 2,640,150 ft
3. **Profile Coordinates:**
   - N: 584,150 ft
   - E: 2,640,150 ft
4. **Site Length:** 300 ft
5. **Ownership:** Private

**Site Parameters**
6. **Type:** Man Influenced
7. **Fetch Exposure:** Open Bay
8. **Shoreline Direction of Face:** Northeast
9. **Nearshore Gradient:** 1,000 to 3,000 ft (Extensive Bars)
10. **Morphologic Setting:** Isolated >500 ft Alongshore/Linear
11. **Relative Stability:** Stable
12. **Underlying Substrate:** Upland
13. **Structure or Fill:** Groin
14. **Site Measurements**
   - **Primary Dune:**
     - Crest Elevation (ft MLW): 9.7
     - Extent from Crest: Landward (ft): 15
   - **Secondary Dune:** None
     - Crest Elevation (ft MLW): N/A
     - Extent between Second and Primary Crest (ft): N/A
     - Second Crest - Landward (ft): N/A
15. **Vegetation Communities**
   - **Primary Dune:**
     - Ammophila breviligulata (American beach grass)
16. **Remarks:**
   - NL52 is a groin influenced isolated dune site. The landward limit is at the top of the upland bank.

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Not intended for use in determining legal jurisdictional limits.
Northumberland County Dune Site 54

**Site Information**

1. Date Surveyed: 24 Jun 1999
2. Central Coordinates:
   - N: 585,400 ft
   - E: 2,637,750 ft
   - Virginia South State Plane Grid NAD 1927 [4502]
3. Profile Coordinates: N/A
4. Site Length: 240 ft
5. Ownership: Private

**Site Parameters**

6. Type: Man Influenced
7. Fetch Exposure: Open Bay
8. Shoreline Direction of Face: Northeast
9. Nearshore Gradient: 1,000 to 3,000 ft (Extensive Bars)
10. Morphologic Setting: Isolated >500 ft Alongshore/Linear
11. Relative Stability: Stable
12. Underlying Substrate: Upland
13. Structure or Fill: Groin

**Site Measurements**

Primary Dune:
- Crest Elevation (ft MLW): 6.1
- Extent from Crest: Landward (ft): 10
- Extent from Crest: To MLW (ft): 40
Secondary Dune: None
- Crest Elevation (ft MLW): N/A
- Extent between Second and Primary Crest (ft): N/A
- Second Crest - Landward (ft): N/A

**Vegetation Communities**

20. Primary Dune: Ammophila breviligulata (American beach grass)
21. Secondary Dune: N/A

22. Remarks:
NL54 is a groin-influenced dune site east of Flag Pond. The site abuts an upland bank.

Not intended for use in determining legal jurisdictional limits.
**NORTHERN MESS COUNTY DUNE SITE 55**

**Site Information**

1. **Date Surveyed:** 24 Jun 1999
2. **Central Coordinates:**
   - N: 587,700 ft
   - E: 2,633,700 ft
3. **Profile Coordinates:**
   - N: 587,700 ft
   - E: 2,633,700 ft
   - Virginia South State Plane Grid NAD 1927 (4502)
4. **Site Length:** 250 ft
5. **Ownership:** Private

**Site Parameters**

6. **Type:** Man Influenced
7. **Fetch Exposure:** Open Bay
8. **Shoreline Direction of Face:** Northeast
9. **Nearshore Gradient:** 1,000 to 3,000 ft (Extensive Bars)
10. **Morphologic Setting:** Creek Mouth Barrier/Split
11. **Relative Stability:** Stable
12. **Underlying Substrate:** Marsh
13. **Structure or Fill:** Revetment and Groin

**Site Measurements**

14. **Crest Elevation (ft MLW):** 4.9
15. **Extent from Crest: Landward (ft):** 7
16. **Extent from Crest: To MLW (ft):** 50

**Secondary Dune:** None

17. **Crest Elevation (ft MLW):** N/A
18. **Extent between Second and Primary Crest (ft):** N/A
19. **Second Crest - Landward (ft):** N/A

**Vegetation Communities**

20. **Primary Dune:** Panicum amarum (running beach grass)

21. **Secondary Dune:** N/A

22. **Remarks:**

NL 55 has evolved between a revetment and a jetty on the downriver boundary and a revetment with groins on the upriver boundary. The site resides in front of an isolated pond just northwest of Flag Pond and may have been part of Flag Pond in the past.

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Looking upriver. Note the large beach that is better seen in the typical profile above.

Not intended for use in determining legal jurisdictional limits.

Looking downstream with the Flag Pond jetties in the distant background.

Plate: 7A

B-50
NORTHUMBERLAND COUNTY DUNE SITE 58

Site Information
1. Date Surveyed: 24 Jun 1999
2. Central Coordinates: 24 Jun 1999
3. Profile Coordinates:
   N: 589,550 ft
   E: 2,630,450 ft
Virginia South State Plane Grid NAD 1927 (4502)
4. Site Length: 900 ft
5. Ownership: Private

Site Parameters
6. Type: Man Influenced
7. Fetch Exposure: Open Bay
8. Shoreline Direction of Face: Northeast
9. Nearshore Gradient: 1,000 to 3,000 ft (Extensive Bars)
10. Morphologic Setting: Dune Field > 500 ft Alongshore/Linear
11. Relative Stability: Stable
12. Underlying Substrate: Upland
13. Structure or Fill: Groin

Site Measurements
Primary Dune:
14. Crest Elevation (ft MLW): 6.6
15. Extent from Crest: Landward (ft): 8
16. Extent from Crest: To MLW (ft): 49
Secondary Dune:
17. Crest Elevation (ft MLW): 9.1
18. Extent between Second and Primary Crest (ft): 19
19. Second Crest - Landward (ft): 52

Vegetation Communities
20. Primary Dune:
   Ammophila breviligulata (American beach grass)
   Panicum amarum (running beach grass)
   Cakile edentulata (sea rocket)
21. Secondary Dune:
   Panicum amarum (running beach grass)
   Shrub/woody

22. Remarks:
NL58 has developed across the drainage of Hack Creek. The existing groins have helped stabilize the beach/backshore region. The downriver half of the site has an eroding dune scarp while the upriver half is a lower stable primary dune.

Looking upriver. Note the dune scarp and “new” vegetated backshore.
Looking downriver.
Not intended for use in determining legal jurisdictional limits.
Looking downriver. Gazebos behind the secondary dune crest mark a nature trail that runs along the community beach area of Harbour Pointe.

Not intended for use in determining legal jurisdictional limits.
**Site Information**

1. **Date Surveyed:** 24 Jun 1999
2. **Central Coordinates:**
   - N: 591,750 ft
   - E: 2,626,900 ft
3. **Profile Coordinates:**
   - N: 591,750 ft
   - E: 2,626,900 ft
   - Virginia South State Plane Grid NAD1927 [4502]
4. **Site Length:** 400 ft
5. **Ownership:** Private
6. **Type:** Man Influenced
7. **Fetch Exposure:** Open Bay
8. **Shoreline Direction of Face:** Northeast
9. **Nearshore Gradient:** 1,000 to 3,000 ft (Extensive Bars)
10. **Morphologic Setting:** Isolated Linear
11. **Relative Stability:** Stable
12. **Underlying Substrate:** Upland
13. **Structure or Fill:** Groin

**Site Parameters**

- **Site Measurements**
  - **Primary Dune:**
    - Crest Elevation (ft MLW): 7.5
    - Extent from Crest: Landward (ft): 18
    - Extent from Crest: To MLW (ft): 52
  - **Secondary Dune:** None
    - Crest Elevation (ft MLW): N/A
    - Extent between Second and Primary Crest (ft): N/A
    - Second Crest - Landward (ft): N/A

**Vegetation Communities**

- **Primary Dune:**
  - Ammophila breviligulata (American beach grass)
  - Spartina patens (saltmeadow hay)
  - Cakile edentulata (sea rocket)
  - Phragmites australis (reed grass)
- **Secondary Dune:** N/A

**Remarks:**

NL61 has developed across a low swale along the upland shore. It is bounded on the downriver side by groins and is open on the upriver end.

Not intended for use in determining legal jurisdictional limits.
Looking upriver. Note the washover sands into the wooded area.

Not intended for use in determining legal jurisdictional limits.
NORTHUMBERLAND COUNTY DUNE SITE 63

Site Information
1. Date Surveyed: 04 Nov 1999
2. Central Coordinates: N: 595,250 ft, E: 2,619,800 ft
   Virginia South State Plane Grid NAD 1927 [4502]
3. Profile Coordinates:
   N: 595,250 ft, E: 2,619,800 ft
4. Site Length: 250 ft
5. Ownership: Private
   Plate: 7B

Site Parameters
6. Type: Man Influenced
7. Fetch Exposure: Open Bay
8. Shoreline Direction of Face: Northeast
9. Nearshore Gradient: >3,000 ft (Extensive Bars)
10. Morphologic Setting: Creek Mouth Barrier/Spit
11. Relative Stability: Land Tansgressive/Erosional
12. Underlying Substrate: Marsh
13. Structure or Fill: Revetment

Site Measurements
14. Crest Elevation (ft MLW): 5.7
15. Extent from Crest - Landward (ft): 19
16. Extent from Crest - To MLW (ft): 77
Secondary Dune:
17. Crest Elevation (ft MLW): N/A
18. Extent between Second and Primary Crest (ft): N/A
19. Second Crest - Landward (ft): N/A

Vegetation Communities
20. Primary Dune: Spartina patens (saltmeadow hay)
21. Secondary Dune: N/A

Remarks:
NL 63 resides as a pocket beach and dune on the upriver side of Cubitt Creek. It is bounded by a revetment on the upriver side and is controlled by the channel on the downriver side.

Not intended for use in determining legal jurisdictional limits.
NORTHUMBERLAND COUNTY DUNE SITE 67

- **Site Information**
  - **Date Surveyed:** 04 Nov 1999
  - **Profile Coordinates:**
    - **N:** 596,750 ft
    - **E:** 2,615,150 ft
  - **Ownership:** Private
  - **Site Length:** 90 ft
  - **Virginia South State Plane Grid NAD 1927 [4502]

- **Site Parameters**
  - **Type:** Man Influenced
  - **Fetch Exposure:** Open Bay
  - **Shoreline Direction of Face:** North
  - **Nearshore Gradient:** 0 to 1,000 ft (Extensive Bars)
  - **Morphologic Setting:** Creek Mouth Barrier/Spit
  - **Relative Stability:** Land Tansgressive/Erosional
  - **Underlying Substrate:** Marsh
  - **Structure or Fill:** Groin and Revetment

- **Site Measurements**
  - **Primary Dune**
    - **Crest Elevation (ft MLW):** 7.7
    - **Extent from Crest: Landward (ft):** 13
    - **To MLW (ft):** 62
  - **Secondary Dune:** None
    - **Crest Elevation (ft MLW):** N/A
    - **Extent between Second and Primary Crest (ft):** N/A
    - **Second Crest - Landward (ft):** N/A

- **Vegetation Communities**
  - **Primary Dune:**
    - Spartina patens (saltmeadow hay)
    - Phragmites australis (reed grass)
  - **Secondary Dune:** N/A
  - **Remarks:**
    - NL 67 sits against a low drainage and pond that is controlled by a groin field and bounded by revetments.

Not intended for use in determining legal jurisdictional limits.
NORTHUMBERLAND COUNTY DUNE SITE 70

Site Information
1. Date Surveyed: 04 Nov 1999
2. Central Coordinates: N: 598,300 ft  E: 2,608,500 ft
3. Profile Coordinates: N: 598,300 ft  E: 2,608,500 ft
   Virginia South State Plane Grid NAD 1927 [4502]
4. Site Length: 670 ft
5. Ownership: Private
6. Type: Man Influenced
7. Fetch Exposure: Riverine, Bay Influenced
8. Shoreline Direction of Face: North
9. Nearshore Gradient: 1,000 to 3,000 ft (Extensive Bars)
10. Morphologic Setting: Creek Mouth Barrier/Spit
11. Relative Stability: Land Tansgressive/Erosional
12. Underlying Substrate: Marsh
13. Structure or Fill: Revetment
14. Crest Elevation (ft MLW): 5.9
15. Extent from Crest: Landward (ft): 5
16. Extent from Crest to MLW (ft): 78
17. Crest Elevation (ft MLW): N/A
18. Extent between Second and Primary Crest (ft): N/A
19. Second Crest - Landward (ft): N/A
20. Primary Dune: Ammophila breviligulata (American beach grass) Cakile edentulata (sea rocket) Shrub/woody
21. Secondary Dune: N/A
22. Remarks:
   NL 70 resides on the upriver side of Hull Creek. It is in a state of general erosion as upland banks are hardened upriver, reducing sand supply to the littoral system.

Looking upriver along the narrow primary dune crest.
Looking downriver from a revetment across the mouth of Hull Creek.
Not intended for use in determining legal jurisdictional limits.

04 NOV 1999
04 NOV 1999
NL73 is located on the upriver side of Presley Creek. It was relatively stable at the time of the site visit. It is bounded on the upriver end by a revetment and is controlled on the downriver end by the channel into Presley Creek.
NORTHERNBERTLAND COUNTY DUNE SITE 78

Site Information
1. Date Surveyed: 04 Nov 1999
2. Central Coordinates:
   N: 614,250 ft
   E: 2,586,800 ft
3. Profile Coordinates:
   N: 614,250 ft
   E: 2,586,800 ft
   Virginia South State Plane Grid NAD 1927 [4502]
4. Site Length: 540 ft
5. Ownership: Private

Site Parameters
6. Type: Man Influenced
7. Fetch Exposure: Riverine, Bay Influenced
8. Shoreline Direction of Face: East
9. Nearshore Gradient: 1,000 to 3,000 ft/No Bars
10. Morphologic Setting: Isolated <500 ft Alongshore/Linear
11. Relative Stability: Land Transgressive/Erosional
12. Underlying Substrate: Marsh
13. Structure or Fill: Groin and Revetment

Site Measurements
15. Extent from Crest: Landward (ft): 10
16. Extent from Crest: To MLW (ft): 62

Secondary Dune: None
17. Crest Elevation (ft MLW): N/A
18. Extent between Second and Primary Crest (ft): N/A
19. Second Crest - Landward (ft): N/A

Vegetation Communities
20. Primary Dune:
   Spartina patens (saltmeadow hay)
   Cakile edentulata (sea rocket)
   Phragmites australis (reed grass)
21. Secondary Dune: N/A

Remarks:
NL 78 is at Lewisetta. It is controlled by a concrete block groin field.

Not intended for use in determining legal jurisdictional limits.